

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,883	06/18/2001	William S. Brennan	2000.046500	1964

7590 04/01/2003

WILLIAMS MORGAN & AMERSON
7676 HILLMONT
SUITE 250
HOUSTON, TX 77040

EXAMINER

COLEMAN, WILLIAM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 04/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/883,883

Applicant(s)

BRENNAN, WILLIAM S.

Examiner

W. David Coleman

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 16-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of groups II, III and IV inventions, claims 15-36 in Paper No. 4 is acknowledged. The traversal is on the ground(s) that the Examiner did not provide a distinction between groups II and III. This is not found persuasive because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
2. The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 5, 6, 7, 8, 9, 10, 11, 12 13, 14 and 15 rejected under 35 U.S.C. 102(e) as being anticipated by Egermeier et al., U.S. Patent Publication No. 2002/0006677 A1
4. Egermeier teaches a semiconductor process as claimed. See FIGS. 1-8.

Pertaining to claim 1, Egermeier teaches a process for use in fabricating an integrated circuit, comprising:

performing an operation on a wafer using a fabrication tool 300;
generating desorbed volatiles from the wafer after performing the operation [0023];
sampling the desorbed volatiles;
generating raw spectral data from the sampled desorbed volatiles, the raw spectral data indicating the content of the desorbed volatiles;

Art Unit: 2823

performing a spectroscopic analysis of the raw spectral data-, and
modifying an operational parameter of the fabrication tool responsive to the result of
the results of the spectroscopic analysis [0025].

5. Pertaining to claim 2, Egermeier teaches the process of claim 1, wherein performing an operation on a wafer using a fabrication tool includes performing a chemical mechanical polishing operation, a plasma etching operation, or a wafer cleaning operation (i.e., cleaning encompasses annealing the wafer to remove unwanted materials [0018]).

6. Pertaining to claim 5, Egermeier teaches the process of claim 1, wherein generating desorbed volatiles from the wafer after performing the operation includes heating the wafer in a vacuum chamber to generate desorbed volatiles .

7. Pertaining to claim 6, Egermeier teaches the process of claim 5. wherein heating the wafer in a vacuum chamber includes heating the wafer in a lamp degas chamber or a pedestal temperature controlled process chamber [0033].

8. Pertaining to claim 7, Egermeier teaches the process of claim 1, wherein sampling the desorbed volatiles includes sampling the desorbed volatiles with a residual gas analyzer [0023].

9. Pertaining to claim 8, Egermeier teaches the process of claim 1, wherein modifying the operational parameter includes issuing a new APC plan [0026].

10. Pertaining to claim 9, Egermeier teaches the process of claim 1, further comprising at least one of storing the results of the spectroscopic analysis;
performing a trend analysis on the results of the spectroscopic analysis; and
performing a variability analysis on the results of the spectroscopic analysis [0029].

Art Unit: 2823

11. Pertaining to claim 10, Egermeier teaches a process for use in fabricating an integrated circuit, comprising:

receiving raw spectral data representative of the content of a plurality of volatiles desorbed from a wafer;

processing the raw spectral data to determine the presence of a residual material on the wafer; and

controlling a process flow operation to reduce the amount of the residual material on the wafer responsive to the results of processing the raw spectral data.

12. Pertaining to claim 11, Egermeier teaches the process of claim 10, wherein receiving the raw spectral data includes

receiving the raw spectral data through at least one of a sensor interface and a data handler.

13. Pertaining to claim 12, Egermeier teaches the process of claim 10, wherein processing the raw spectral data includes performing a spectroscopic analysis on the raw spectral data.

14. Pertaining to claim 13, Egermeier teaches the process of claim 10, wherein controlling the process flow operation to reduce the amount of the residual material on the wafer includes modifying an operational parameter of a fabrication tool.

15. Pertaining to claim 14, Egermeier teaches the process of claim 13, wherein modifying the operational parameter includes issuing a new APC plan.

16. Pertaining to claim 15, Egermeier teaches the process of claim 10, further comprising at least one of storing the results of the spectroscopic analysis;
performing a trend analysis on the results of the spectroscopic analysis; and
performing a variability analysis on the results of the spectroscopic analysis.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egermeier et al., U.S. Patent Application Publication No. US 2002/0006677 A1 as applied to claims 1-2 and 5-15 above, and further in view of Lee et al., U.S. Patent 5,865,900.

19. Egermeier teaches a semiconductor process substantially as claimed as discussed above. However, Egermeier fails to disclose the process of claims 1 and 2 wherein modifying the operational parameter of the fabrication tool includes increasing a rinse time or increasing a polishing time of the chemical mechanical polishing operation or resetting a scheduled maintenance time. Lee teaches modifying the operational parameter of the fabrication tool to include a time function for the chemical mechanical polishing operation. In view of Lee, it would have been obvious to one ordinary skill in the art to incorporate the process steps of Lee into the process of Egermeier because the residual gas analyzer as an endpoint detection step (column 9, line 9) and CMP is common in the art (column 6, lines 60-61).

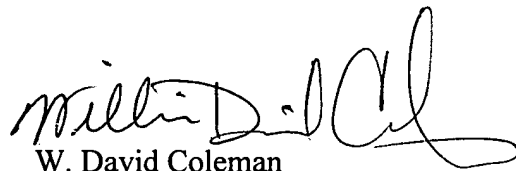
Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004. The examiner can normally be reached on 9:00 AM-5:00 PM.

Art Unit: 2823

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A handwritten signature in black ink, appearing to read "William D. Coleman", with a stylized flourish at the end.

W. David Coleman
Examiner
Art Unit 2823

WDC
March 26, 2003